

WATER

Working together saves environment

Sustainable business is now a possibility in the industrial township of Hammarsdale after different parties agreed to combine their efforts.

BUSINESS SOLUTION

By offering businesses incentives to limit waste and charging them according to waste production, local municipalities could be better equipped to manage wastewater and protect the environment.

The Hammarsdale industrial node between Durban and Pietermaritzburg was created as an industrial decentralisation hub in the 1970s. The then Department of Co-operation & Development created it to attract the textile industry in particular. The key objective was to provide inexpensive, labour-intensive industry close to the former KwaZulu homeland but little attention was paid to issues of environmental sustainability.

As time went by, the Hammarsdale wastewater-treatment works became overloaded with colour and salt; primarily from the many textile industries in the area. These factories all have dye baths. Preparation of the yarn for dyeing, as well as the actual dyeing and rinsing, contaminate the water. A lot of dyes can be taken out by a conventional wastewater-treatment plant but some reactive dyes, especially red, cannot. Also associated with the dyeing process is salt-dosing. The various types of salt are usually difficult to take out. Pollution was eventually passed on to the Sterkspruit River, and even threatened to move downstream and contaminate the Shongweni Dam.

According to Chris Fennemore of eThekweni Municipality's water and sanitation department, talks about pollution problems in the Sterkspruit catchment, a sub-catchment of the Umlaas River, began around 1998.

UNCERTAIN OWNERSHIP

One of the first obstacles in addressing the environmental issues was the ownership of the Hammarsdale wastewater-treatment works. Taking over ownership and operation of the Hammarsdale wastewater-treatment works in 1982 from the Department of Water Affairs & Forestry (DWA), Umgeni Water optimised the purification process over the next 20 years by changing aeration and adding chemical dosing. But, in terms of the 1997 Water Services Act, eThekweni Municipality is actually the relevant water-services authority in the area and is, therefore, responsible for the wastewater-treatment function. Discussion of the ownership issue began but it was obvious agreement would not be reached easily. In the meantime, Umgeni Water obviously saw no need to invest more money in the treatment works so pollution problems were not addressed. "This was a 'lose-lose' situation," says Fennemore. "Nobody was taking responsibility and the environment was suffering."

The benefit of the initiative – improvement in water quality – is evident in the Sterkspruit River.

A few individuals from eThekweni and Umgeni sat around a table and argued the environment could not wait for political decisions and that a "win-win" solution should be sought to address the issues. "One of the first things we decided was to ring-fence the project so that Umgeni would not incur any extra costs," says Fennemore. "It was decided costs incurred would somehow be recovered. We 'upped' the tariffs paid by industry over two to three years. This actually proved to us industry is willing pay to get rid of its waste."

The flat tariff presented a problem – no matter what quality the effluent was. For instance, effluent from a local Rainbow Chickens abattoir was taking up 75% of the organic load of the water-treatment works but it was still paying the same as another consumer downstream. Because of the abattoir's high organic load, the wastewater-treatment works was actually at full capacity although it was only receiving about 30% of the volume it could potentially accommodate.

WASTE MINIMISATION

Already involved in the area since 1993, the Pollution Research Group (PRG) of the University of KwaZulu-Natal, funded by the Water Research Commission, initiated a waste-minimisation club in 1999 to encourage industry to move towards cleaner production.

According to the PRG's official website, waste minimisation can be defined as the application of a systematic approach to reducing waste at source. In other words, preventing waste in the first place, rather than installing expensive end-of-pipe treatment systems, to solve the problem. Waste minimisation relates to all inputs and outputs from an industry, business, site or process.

In 2000, Danida provided funding to undertake specific waste-minimisation projects in the area. This initiative also funded the production of a cleaner production guide for regulators. The combined projects resulted in reported savings of R10-million over three years from five industries. The savings were mainly in energy (28%), effluent treatment costs (25%) and water (22%). Little or



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no effect was observed, however, in the quality of effluent delivered to the Hammarsdale wastewater-treatment works.

BARGAINING CHIP

In the meantime, eThekweni Municipality was considering the implications of taking over the operation of the Hammarsdale works. Umgeni Water was operating just a few treatment works as it was focusing on expanding its role as a bulk-water services provider. However eThekweni has about 30 wastewater-treatment plants it owns and operates; providing economy of scale from a technical and operational point of view. Calculations indicate the wastewater could be treated at about half the price Umgeni Water was paying.

By now industry was accustomed to Umgeni's higher tariff on waste loads. The situation provided eThekweni with a valuable bargaining chip: it was willing to pass on the benefit of the reduction of tariffs as soon as industry complied with better standards.

TARIFF STRUCTURE

The eThekweni Municipality bought the treatment works from Umgeni Water in July 2003 and devised a plan to start reducing effluent discharge from the factories. A new tariff rate was introduced:

- If a business implemented best available techniques and improved efficiency, it would receive a 30% reduction in its tariff from the local municipality.
- If the company also complied with the new discharge standard, it would receive a 70% reduction on its old Umgeni Water tariff.

In addition, the Norwegian Pollution Control Authority helped set up a new five-year integrated pollution-control permit. Permit application formed the basis of an environmental management system. The targets for colour were then inserted into the permits. In January 2005, each industry was issued with a new, five-year permit for effluent discharge, explaining environmental standards and targets. ■